

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-088155
(43)Date of publication of application : 03.04.2001

(51)Int.Cl. B29C 43/02
B29C 43/36
B60R 13/04
// B29L 31:30

(21)Application number : 11-273023
(22)Date of filing : 27.09.1999

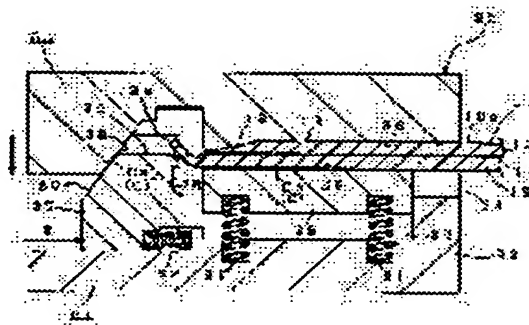
(71)Applicant : INOAC CORP
(72)Inventor : FUJIMATSU HIDEYASU
ETO ISAMU

(54) METHOD AND MOLD FOR TERMINAL PROCESSING OF MOLDING

(57)Abstract

PROBLEM TO BE SOLVED: To provide the subject method and mold capable of obtaining a molding product not generating not only a splice line and gloss irregularity in the design surface of its terminal but also dragging, wrinkles or the like even if the cross-sectional shape of a molding material is complicated and having beautiful appearance.

SOLUTION: The terminal processing cavity C of a lower mold 21 is constituted of a cavity leading end part Ca and a cavity main body part Cb and the cavity main body part is constituted so as to be upwardly energized up to a position almost equal to the upper end position of the cavity leading end part and pressed from above to be pushed down to a normal position and a molding material 11 is arranged in the cavity main body part brought to the upper position and the leading end 12a of the molding material is allowed to protrude from the leading end of the cavity main body part to be placed on the upper end of the cavity leading end part and, subsequently, the terminal 12 of the molding material is heated and softened while the cavity main body part is pushed down into a lower mold along with the molding material by an upper mold 35 to press the molding material under heating.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

(51) Int. Cl. ⁷	識別記号	F I	ターコード (参考)
B29C 43/02		B29C 43/02	3D023
43/36		43/36	4F202
B60R 13/04		B60R 13/04	A 4F204
// B29L 31:30		B29L 31:30	

審査請求 未請求 請求項の数 4 O L (全10頁)

(21) 出願番号 特願平11-273023
 (22) 出願日 平成11年9月27日(1999.9.27)

(71) 出願人 000119232
 株式会社イノアックコーポレーション
 愛知県名古屋市中村区名駅南2丁目13番4号
 (72) 発明者 藤松 英靖
 愛知県安城市藤井町東長先8番地1 株式会社イノアックコーポレーション桜井事業所内
 (74) 代理人 100079050
 弁理士 後藤 憲秋 (外1名)

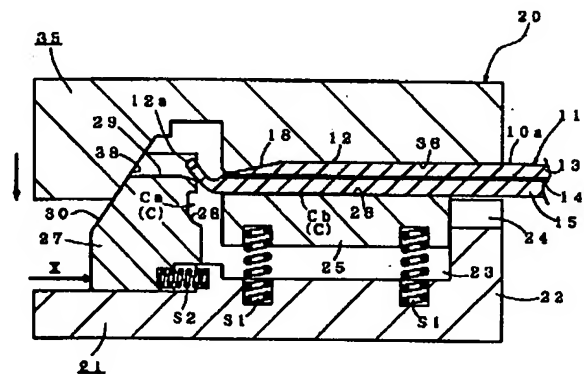
最終頁に続く

(54) 【発明の名称】 モールの端末加工方法とモール端末加工用金型

(57) 【要約】

【課題】 端末の意匠面に継ぎ目ラインおよび艶のムラが現れず、しかも、モール素材の断面形状が複雑であっても、かじり、皺等が生じず、外観が美しいモール製品を得ることができる端末加工方法と端末加工用金型を提供する。

【解決手段】 下型21の端末加工用キャビティCを、キャビティ先端部Caとキャビティ本体部Cbとで構成し、該キャビティ本体部をキャビティ先端部の上端位置と略等しい位置まで上方へ付勢して上方からの押圧によって正規の位置へ押し下げられるように構成し、前記上方位置にあるキャビティ本体部内にモール素材11を配置し、該素材の先端12aを前記キャビティ本体部先端から突出させて前記キャビティ先端部上端に乗せ、次いで、モール素材の端末12を加熱軟化させ、上型35によってキャビティ本体部をモール素材と共に下型内に押し下げて加熱プレスする。



【特許請求の範囲】

【請求項1】 モール素材の端末を下型の端末加工用キャビティに、当該モール素材の先端が前記キャビティ先端上部へ乗り上げるようにして配置し、その後上型によって加熱プレスして前記モール素材の端末を押圧して下型のキャビティ内に押し込み賦形する端末加工方法において、

前記下型の端末加工用キャビティを、キャビティ先端部と、該先端部に続くキャビティ本体部とで構成し、該キャビティ本体部の内面を前記モール素材の装飾部外形に対応した形状とするとともに、該キャビティ本体部をキャビティ先端部の上端位置と略等しい位置まで上方へ付勢して上方からの押圧によって正規の位置へ押し下げられるように構成し、

前記上方位置にある下型のキャビティ本体部内にモール素材を配置し、該素材の先端を前記キャビティ本体部の先端から突出させて前記キャビティ先端部の上端に乗せ、

次いで、前記モール素材の端末を加熱軟化させ、上型によってキャビティ本体部をモール素材と共に下型内に押し下げて加熱プレスすることにより、前記キャビティ本体部の先端から突出するモール素材の先端を下型のキャビティ先端部内に押し込み賦形することを特徴とするモールの端末加工方法。

【請求項2】 モール素材がレインガータ部を有するルーフモール用押出成形品であることを特徴とする請求項1記載のモールの端末加工方法。

【請求項3】 モール素材の端末を下型の端末加工用キャビティに、当該モール素材の先端が前記キャビティ先端上部へ乗り上げるようにして配置し、その後上型によって加熱プレスして前記モール素材の端末を押圧して下型のキャビティ内に押し込み賦形するのに用いられる金型において、

前記下型の端末加工用キャビティを、キャビティ先端部と、該先端部に続くキャビティ本体部とで構成し、該キャビティ本体部の内面を前記モール素材の装飾部外形に対応した形状とするとともに、該キャビティ本体部をキャビティ先端部の上端位置と略等しい位置まで上方へ付勢して上方からの押圧によって正規の位置へ押し下げられるように構成したことを特徴とするモール端末加工用金型。

【請求項4】 キャビティ本体部にモール素材のレインガータ部が嵌る突条を有することを特徴とする請求項3記載のモール端末加工用金型。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、モールの端末加工方法及びモール端末加工用金型に関し、特に複雑な断面形状を有するモールの端末加工方法及びモール端末加工用金型に関する。

【0002】

【従来の技術】図12およびその一部を拡大して示す図13のように、自動車40のルーフ41にはルーフモール50が取り付けられることが多い。前記ルーフモール50は、そのルーフモール50を外したルーフの一部を示す図14から理解されるように、中央パネル42と側部パネル43が一体に接合される継ぎ目部分を隠すため、その継ぎ目部分に形成された溝部44に装着されるものである。

10 【0003】前記ルーフモール50は、図15から分かるように、脚部52と該脚部52の上端に設けられて意匠側となる装飾部53とからなり、前記ルーフ41の溝部44に前記脚部52を挿入し装飾部53で前記溝部44を塞ぐように装着される。また、前記脚部52にはルーフモール50が前記継ぎ目部分の溝部44に正しく装着保持し、また線膨張を少なくするために、長手方向に沿って金属芯材54が埋設されることが多い。符号55は、前記溝部への固定を確実にするため、脚部52の下部両側面に長手方向に沿って形成されたリップ（ひれ片）である。

【0004】ところで、前記ルーフ41の継ぎ目部分の溝部44は、その両端を溝部44の中央と同じ深さでプレス成形するとアッパーコーナー部45に破れを生じるため、溝部44の端に向かって徐々に浅くされている。そのため、前記ルーフモール50として、モール素材である長尺押出成形品51を単に所定長に切断したものをを用いたのでは、脚部52の下端がボディに干渉して当該ルーフモール50を正しく装着できなくなったり、美観が損なわれる。

30 【0005】これらの不具合を解決する一つ的手段として、図15に示すように所定長に切断した押出成形品よりなるモール素材51の端部に、前記溝部44の端部の深さに合い、かつ先端部分が裏側へ屈曲した端末部61を射出成形することが考えられる。しかし、前記端末部61を射出成形したルーフモール50にあっては、その端末表面のモール素材51と端末部61との間で、継ぎ目ライン62が現れ、当該ルーフモール50の美観を損なう等の問題があった。

【0006】そこで、図16に示すような加熱プレスによって、モール素材の端末を屈曲形状等の所定形状に加工することが提案されている。この加熱プレスにおいては、まず同図の(A)のように、加工用金型70の下型71の端末加工用キャビティ72に、当該押出成形品よりなるモール素材51の先端56が前記キャビティ72の先端上部（喰いきり部分）73へ乗り上げるようにして配置するとともに、該モール素材51の端末57をヒータ等の加熱手段75により加熱軟化する。その後、同図の(B)のように、上型76で加熱プレスすることによって、前記モール素材51の端末57を押圧し、該素材51の端末57を下型71のキャビティ72内に押し込

み賦形する。この加熱プレスによれば、先に説明した端末部を射出成形したものと異なり、モール素材51と端末57との間で継ぎ目ラインが現れず、外観が良好となる。なお、この加熱プレスによる端末加工方法は、前記ルーフモールのみならず、自動車の車体側面のドア部分に取り付けられるサイドモール等種々のモールの端末加工に適用されている。図中の符号58は加熱プレスの際に余ったモール素材の余剰部分で、最終的に切除されるものである。

【0007】しかしながら、この加熱プレスによるモールの端末加工方法においては、図16の(A)からも分かるように、モール素材51の端末57の加熱時に該モール素材51の先端56付近が下型71のキャビティ72内面から遠く離れているため、その加熱時に加熱手段75であるヒータ等の熱風がモール素材51の端末57表面とキャビティ72内面間の隙間Gに回り込み、過度にモール素材51が加熱されて、加工後の製品表面の艶にムラを生じることがあった。

【0008】さらに、前記従来の端末加工方法においては、図17に示すような装飾部82にレインガータ部83を有する等、断面形状が複雑なモール素材81を端末加工する場合、該モール素材81の複雑な断面形状に起因して、モール素材のキャビティへの配置時に該素材を正しい位置に配置させることができなかったり、あるいは配置後当該モール素材がズレたりして、加熱プレス時に加熱軟化したモール素材の端末をキャビティ内に正しく押し込むことができないことがあり、そのような場合には、製品表面に所謂かじりと称される傷や皺が生じる等、良好な製品が得られないおそれがあった。また、前記のようにモール素材が正しい位置に配置されなかったり、配置後モール素材がズレた場合には、モール素材を加熱軟化させる際に該モール素材の加熱状態にバラツキが生じ、加工後において製品の前記バラツキのあった部分で変形が生じることがある。なお、図17中の符号84は脚部、85は脚部84に埋設された金属芯材、86は脚部84の下部両側面に長手方向に沿って形成されたリップ(ひれ片)である。

【0009】また、図17に示したモール素材81のように、装飾部82のレインガータ部83と装飾部上端87間でアンダーカット形状88を構成する場合には、それに対応して下型のキャビティ内面もアンダーカット形状を有することとなるため、加熱プレス前におけるキャビティ内へのモール素材の配置を、キャビティの後端側から該モール素材をスライド挿入することによって行う必要があり、上述したようにモール素材先端がキャビティの先端上部へ乗り上げるように当該モール素材を正しく配置するのは困難である。加えて、上記アンダーカット形状88を有するモール素材81を端末加工する場合には、加熱プレス後の製品の脱型作業をスムーズに行えないことがあった。

【0010】

【発明が解決しようとする課題】この発明は前記の点に鑑みなされたもので、端末の意匠面に継ぎ目ラインおよび艶のムラが現れず、しかも、モール素材の断面形状が複雑であっても、かじり、皺等が生じず、外観が美しいモール製品を得ることができる端末加工方法と端末加工用金型を提供することを目的とする。

【0011】

【課題を解決するための手段】請求項1の発明は、モール素材の端末を下型の端末加工用キャビティに、当該モール素材の先端が前記キャビティ先端上部へ乗り上げるようにして配置し、その後上型によって加熱プレスして前記モール素材の端末を押圧して下型のキャビティ内に押し込み賦形する端末加工方法において、前記下型の端末加工用キャビティを、キャビティ先端部と、該先端部に続くキャビティ本体部とで構成し、該キャビティ本体部の内面を前記モール素材の装飾部外形に対応した形状とするとともに、該キャビティ本体部をキャビティ先端部の上端位置と略等しい位置まで上方へ付勢して上方からの押圧によって正規の位置へ押し下げられるように構成し、前記上方位置にある下型のキャビティ本体部内にモール素材を配置し、該素材の先端を前記キャビティ本体部の先端から突出させて前記キャビティ先端部の上端に乗せ、次いで、前記モール素材の端末を加熱軟化させ、上型によってキャビティ本体部をモール素材と共に下型内に押し下げて加熱プレスすることにより、前記キャビティ本体部の先端から突出するモール素材の先端を下型のキャビティ先端部内に押し込み賦形することを特徴とするモールの端末加工方法に係る。

【0012】請求項2の発明は、請求項1の発明において、モール素材がレインガータ部を有するルーフモール用押出成形品であることを特徴とする。

【0013】また、請求項3の発明は、モール素材の端末を下型の端末加工用キャビティに、当該モール素材の先端が前記キャビティ先端上部へ乗り上げるようにして配置し、その後上型によって加熱プレスして前記モール素材の端末を押圧して下型のキャビティ内に押し込み賦形するのに用いられる金型において、前記下型の端末加工用キャビティを、キャビティ先端部と、該先端部に続くキャビティ本体部とで構成し、該キャビティ本体部の内面を前記モール素材の装飾部外形に対応した形状とするとともに、該キャビティ本体部をキャビティ先端部の上端位置と略等しい位置まで上方へ付勢して上方からの押圧によって正規の位置へ押し下げられるように構成したことを特徴とするモール端末加工用金型に係る。

【0014】また、請求項4の発明は、請求項3の発明において、キャビティ本体部にモール素材のレインガータ部が嵌る突条を有することを特徴とする。

【0015】

【発明の実施の形態】以下添付の図面に従ってこの発明

を詳細に説明する。図1はこの発明の一実施例により得られた自動車用ルーフモールを示す要部の斜視図、図2はモールの端末加工に用いるモール端末加工用金型の下型および上型の一例を示す斜視図、図3はモールの端末加工における切除工程を段階的に示す斜視図、図4は同じく配置工程および加熱軟化工程を示す断面図、図5は図4のa-a断面図、図6は図4のb-b断面図、図7は同じくプレス工程の閉型初期を示す断面図、図8は同じくプレス工程の閉型完了時を示す断面図、図9は図8のc-c断面図、図10は図8のd-d断面図、図11は同じく脱型工程を示す断面図である。

【0016】まず、この発明に係るモールの端末加工方法により得られた自動車用ルーフモールの一例について説明し、次にそのルーフモールの端末加工方法について説明する。

【0017】図1に示す自動車用ルーフモール10は、金属芯材14が埋設された脚部13と該脚部13の上端に装飾部15が一体に形成された、所定断面形状からなる押出成形品の樹脂製モール素材11から、この発明に係る方法によって端末加工されたもので、図14に示したルーフ41の溝部44の深い部分に装着される本体部10aと、溝部44の浅い端部に装着される端末12とが継ぎ目ライン無く一連となっている。

【0018】前記装飾部15は、その外面が意匠面を構成し、前記ルーフ41の溝部44を塞ぐ幅とされて脚部13上端から幅方向両側へ張り出しており、端末12については、その表面側が、この発明に係る端末加工方法により、先端12aに向けて徐々に低くなって所定の曲面形状に仕上げられているとともに、前記端末12の先端12aについては裏側へ屈曲形成されている。また、この例においては、前記装飾部15はレインガータ部16を有しており、当該モール10の断面形状は複雑なものとなっている。さらに、この例では、前記装飾部15のレインガータ部16と装飾部上端15a間でアンダーカット形状Uを構成している。

【0019】一方、前記脚部13は、前記ルーフ41の溝部44に挿入されて該ルーフモール10を溝部44に嵌着するためのもので、脚部13の下部両側には、その脚部13を前記溝部44内に挿入した際に溝部44の側壁に圧接してルーフモール10を安定的に保持するために、軟質樹脂からなるリップ17が一体に形成されている。この脚部13は、ルーフモール10の端末12において、本体部10a側から端末12の先端12aに向けて薄くなるように脚部13下側が装飾部15裏面に向けて斜めに切除され、前記リップ17についても除去されている。符号18は、前記切除によって形成された脚部13の切除部であり、前記ルーフ41の溝部44の端部の深さに応じて切除されている。なお、この例では、前記端末12の先端12a付近で、金属芯材14とともに脚部13が完全に除去されている。

【0020】次に、この発明に係るモールの端末加工方法の一実施例について、前記レインガータ部16を有するルーフモール10の端末加工を例として説明する。実施例の端末加工方法においては、図2及び図7等に示すようなモール端末加工用金型20が用いられる。この金型20は、下型21と上型35とを含み、図示しないプレス装置により閉型およびプレス可能とされている。

【0021】下型21は、本体部22と、該本体部22の收容空間23内に昇降自在に收容される昇降型部25と、該昇降型部25の前方に位置する前後スライド型部27とを備える。前記昇降型部25の成形面26および前後スライド型部27の成形面28により端末加工用キャビティCが形成される。このキャビティCは、前記前後スライド型部27の成形面28により区画されたキャビティ先端部Caと、該先端部Caに続き前記昇降型部25の成形面26により区画されたキャビティ本体部Cbとで構成されている。前記キャビティ本体部Cbの内面、すなわち昇降型部25の成形面26は、前記モール素材11の装飾部15外形に対応した形状に形成され、モール素材11のレインガータ部16が嵌る突条26aを有している。

【0022】また、前記キャビティ本体部Cbは、キャビティ先端部Caの上端位置（図示の例では前後スライド型部27の上面に形成された端末先端用載置面29の位置）と略等しい位置まで上方へ付勢されている。そして、前記上方へ付勢されているキャビティ本体部Cbは、上方からの押圧によって正規の位置、実施例では前記昇降型部25の成形面26と前後スライド型部27の成形面28とが面一となるような位置まで押し下げられるようになっている。なお、実施例では、前記本体部22と昇降型部25間に介在されたスプリングS1の弾性力によって、上記のようにキャビティ本体部Cbが上方へ付勢されている。さらに、実施例では、前記本体部22に、モール素材受け部24が、前記キャビティ本体部Cbの正規位置にあるときに該本体部Cbと連続するように形成されている。

【0023】さらに、前記前後スライド型部27は、閉型時の上型35の下降に伴い外側面30が後述する上型35の傾斜部38と当接することによって、端末加工用キャビティCの外側から内側方向Xへ移動（前進）するようになっている。また、前記スライド型部27と本体部22間にはスプリングS2が介在され、該スプリングS2の弾性力によって、型開きの際の上型35上昇時に前後スライド型部27がキャビティCの内側から外側方向Yへ移動（後退）し元の位置へ戻るようになっている。なお、前記前後スライド型部27が最も後退する位置は、上型35の上昇による昇降型部25の上昇時に、キャビティ先端部Ca内に押し込まれたモール素材11の端末先端12aと当該前後スライド型部27とが接触しないように設定される。

【0024】上型35は、モール素材11の端末12を裏側から押圧するためのモール素材用押圧面36を有する。図示の例では、前記モール素材用押圧面36の両側に、前記下型21の昇降型部25を押圧して該昇降型部25を下降させる昇降型部用押圧面37が設けられている。なお、前記昇降型部用押圧面37は、場合によっては省かれ、前記モール素材用押圧面36の押圧力のみでもって、モール素材11のプレスおよび前記昇降型部25の押し下げを行うようにしてもよい。また、上型35には、前記下型21の前後スライド型部27と当接して

10 該スライド型部27を移動させる傾斜部38が設けられている。

【0025】上記したようなモール端末加工用金型30を用いるモールの端末加工においては、まず、図3の

(A)に示す所定断面形状、すなわち前記装飾部15と脚部13とを有する、押出成形品よりなる樹脂製モール素材11を所定長に切断する。

【0026】続いて、前記所定長のモール素材11に対し、その端末12の裏側について装飾部15を残して、図3の(B)に示すように、端末先端12aから所定長の長さ

20 の長さに渡って脚部13を部分的に切除する。この脚部13の切除は、前記ルーフ41の溝部44の端部における浅くなった部分と対応する範囲に渡って行われ、また、脚部13が切除されていないモール素材11の本体部10a側から端末先端12aに向けてモール素材11の厚みが徐々に薄くなるよう、切除部18下端が装飾部15裏面へ向けて傾斜した形状に切除される。さらに、この実施例においては、端末先端12a付近は、金属芯材14とともに脚部13が完全に切除される。なお、切除方法は、カッター等を用いる公知の切断方法によって

30 行われる。

【0027】次いで、図4ないし図6に示すように、前記モール素材11の端末12を前記上方位置にある下型21のキャビティ本体部Cb内に配置する。この際、モール素材11の先端12aを前記下型21のキャビティ本体部Cb先端から突出させて前記キャビティ先端部Caの上端、図示の例では前後スライド型部27の端末先端用載置面29にさせるようにする。このようにモール素材11を端末加工用キャビティCに配置すれば、至って簡単にモール素材11を正しい位置に確実に配置することができるとともに、配置後において当該モール素材11はズレ難い。また、この実施例のようにモール素材11の装飾部15にアンダーカット形状Uを有する場合には、前記モール素材11のキャビティ本体部Cb内への配置は、該キャビティ本体部Cbの後端側の開口から当該モール素材11をスライド挿入することによって行われる。なお、このモール素材11の配置時には前記前後スライド型部27は後退位置にある。

【0028】前記モール素材11の配置後、ヒータ等の加熱手段Hによってモール素材11の端末12の切除部

18付近を加熱軟化させる。このとき、従来とは異なり、モール素材11の端末12と下型21のキャビティ本体部Cbの内面、すなわち昇降型部25の成形面26間に隙間が生じないため、加熱手段Hであるヒータ等の熱風がモール素材11の端末12とキャビティ本体部Cb内面間に回り込んで過度にモール素材11が加熱されるのを防ぎ、製品表面の艶にムラが生じ難い。前記加熱の程度は、モール素材11の端末12が軟化する程度とされ、モール素材11の材質に応じて適宜の温度とされる。なお、図示の例では前記加熱手段Hは金型20とは別に設けられているが、当該加熱手段Hを下型21あるいは上型35に内蔵させてもよい。

【0029】前記端末12の加熱軟化後、図7ないし図10に示すように、加工用金型20を閉型し、前記上型35によってモール素材11と共に前記昇降型部25のキャビティ本体部Cbを下型21の本体型部22内に押し下げて当該モール素材端末12の切除部18を加熱プレスする。これによって、前記キャビティ本体部Cbの先端から突出するモール素材11の先端12aが前記キャビティ先端部Ca内に押し込まれ、当該モール素材端末12が所望形状に賦形される。

【0030】前記金型20の閉型の際、図7から理解されるように、下型21の前後スライド型部27の外側面30が上型35の傾斜部38と当接することによって前記端末加工用キャビティCの外側から内側方向Xへ移動して、閉型完了時には、図8のように前後スライド型部27と本体型部22とが隙間無く合体し、キャビティ先端部Caとキャビティ本体部Cbが連続して一体となる。このように前記昇降型部25のキャビティ本体部Cbの下降と平行して前後スライド型部27の前進を行うようにすれば、加熱プレス時にモール素材端末12の先端12a付近を裏側にスムーズに屈曲させ、前記モール素材11の先端12aのキャビティ先端部Ca内への押し込みを確実かつスムーズに行うことができる。その結果、端末加工用キャビティCの内面をモール素材11に良好に転写でき、外観性に優れたモール製品が得られる。図8中の符号Bは加熱プレスの際に余ったモール素材の余剰部分である。

【0031】その後、図11に示すように、上型35を上昇させて型開きする。その際、前記下型21の本体型部22内に押し下げられていた昇降型部25は、スプリングS1の付勢力により本体型部22に対して上昇して閉型前の元の位置に戻るとともに、前後スライド型部27が、昇降型部25および加熱プレスされたモール素材11の上昇を妨げないように、端末加工用キャビティCの内側から外側方向Yへ移動する。

【0032】前記型開き後、加熱プレスされたモール素材11を脱型するとともに、モール素材11の端末先端12aに生じた余剰部分Bを除去することによって、図1に示すようなモール製品(ルーフモール)10が得ら

れる。前記脱型の際、加熱プレスされたモール素材11は、前記昇降型部25のキャビティ本体部Cbと共にキャビティ先端部Caの上端位置まで上昇しているの、脱型作業が容易になる。なお、この実施例では、モール素材11の脱型は、モール素材11の装飾部15にアンダーカット形状Uを有することを考慮して、図示の鎖線で示すように、当該モール素材11をキャビティCの内側から外側方向Yへスライドさせながら抜き取ることによって行われる。

【0033】

【発明の効果】以上図示し説明したように、請求項1の発明に係るモールの端末加工方法によれば、加熱プレスにより端末加工をおこなうので、端末を射出成形するのとは違って、製品の意匠面に継ぎ目ラインが現れない。また、この端末加工方法においては、下型の端末加工用キャビティをキャビティ先端部とそれに続くキャビティ本体部とで構成し、該キャビティ本体部をキャビティ先端部の上端位置と略等しい位置まで上方へ付勢して上方からの押圧によって正規の位置へ押し下げられるようにして、上方位置にあるキャビティ本体部内にモール素材を配置し、該素材の先端を前記キャビティ本体部先端から突出させて前記キャビティ先端部上端に乗せた後、上型によって前記キャビティ本体部をモール素材と共に下型内に押し下げて加熱プレスするので、モール素材の配置時に素材端末表面とキャビティ内面間に隙間が生じない。その結果、モール素材を加熱軟化させる際に加熱手段の熱風等がモール素材端末表面とキャビティ本体部内面間に回り込んで過度にモール素材が加熱されるのを防ぐことができ、加工後の製品表面の艶にムラが生じ難い。

【0034】さらに、上記のようにモール素材を端末加工用キャビティへ配置するので、請求項2の発明の如くモール素材がレインガーター部を有する場合のように、モール素材の断面形状が複雑になっても、当該モール素材を簡単かつ確実にキャビティの正しい位置に配置できるとともに、当該配置はモール素材を屈曲させることなくフラットな状態で行われるので、配置後におけるモール素材の安定性が高まり、配置後モール素材がズレ難い。したがって、従来とは異なり、加熱プレス時に加熱軟化したモール素材の端末をキャビティ内に正しく押し込むことができ、製品表面に所謂かじりと称される傷や皺が発生するといった不具合を解消でき、外観性に優れた製品を得ることができる。加えて、モール素材を加熱軟化させる際に該モール素材の加熱状態にバラツキが生じず、加工後における製品の変形が生じ難い。

【0035】また、請求項3の発明に係るモール端末加

工用金型によれば、前記端末加工方法を簡単かつ確実に実施することができる。特に、請求項4の発明によりに、下型のキャビティ本体部にモール素材のレインガーター部が嵌る突条を設ければ、レインガーター部を有するモールの端末加工を好適に行うことができる。

【図面の簡単な説明】

【図1】この発明の一実施例により得られた自動車用ルーフモールの示す要部の斜視図である。

【図2】モールの端末加工に用いるモール端末加工用金型の下型および上型の一例を示す斜視図である。

【図3】モールの端末加工における切除工程を段階的に示す斜視図である。

【図4】同じく配置工程および加熱軟化工程を示す断面図である。

【図5】図4のa-a断面図である。

【図6】図4のb-b断面図である。

【図7】同じくプレス工程の閉型初期を示す断面図である。

【図8】同じくプレス工程の閉型完了時を示す断面図である。

【図9】図8のc-c断面図である。

【図10】図8のd-d断面図である。

【図11】同じく脱型工程を示す断面図である。

【図12】ルーフモールが装着された自動車の一例の斜視図である。

【図13】そのルーフの一部を示す拡大図である。

【図14】ルーフモールを取り外したルーフの一部を示す拡大図である。

【図15】従来のルーフモールの端末を示す斜視図である。

【図16】従来の加熱プレスによるモールの端末加工を段階的に示す断面図である。

【図17】複雑な断面形状を有するモール素材の一例を示す斜視図である。

【符号の説明】

10 ルーフモール

11 モール素材

12 モール素材の端末

12a モール素材の先端

15 装飾部

20 モール端末加工用金型

21 下型

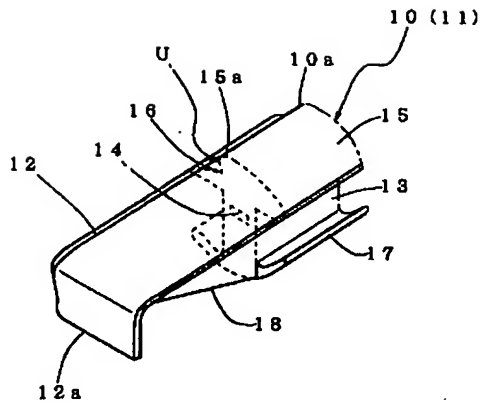
35 上型

C 下型の端末加工用キャビティ

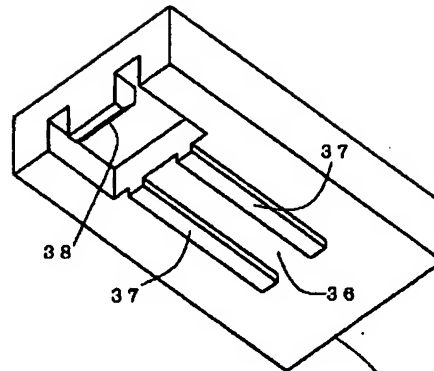
Ca キャビティ先端部

Cb キャビティ本体部

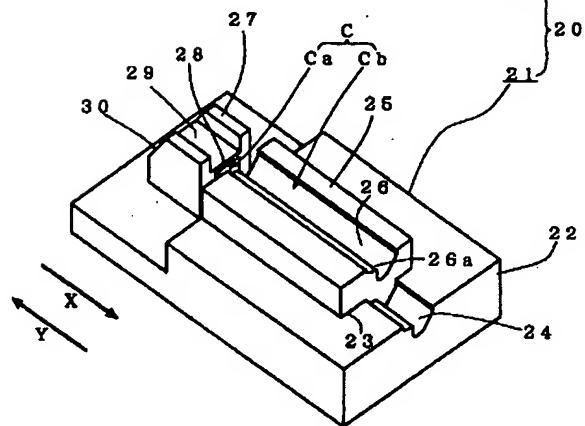
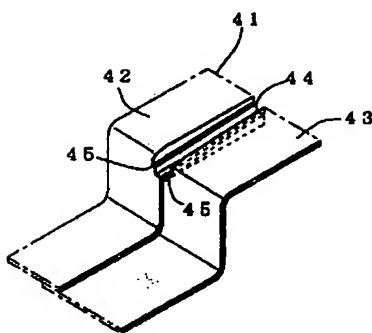
【図1】



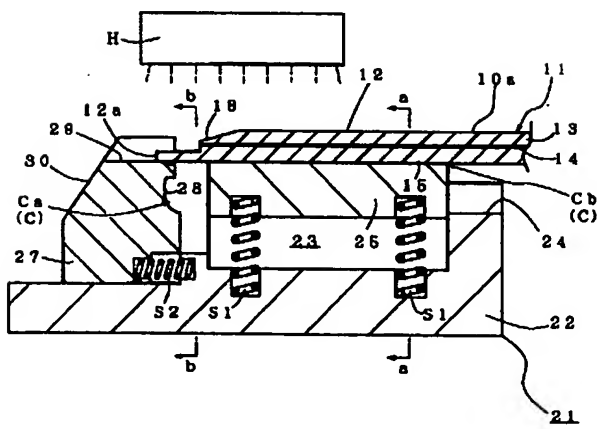
【図2】



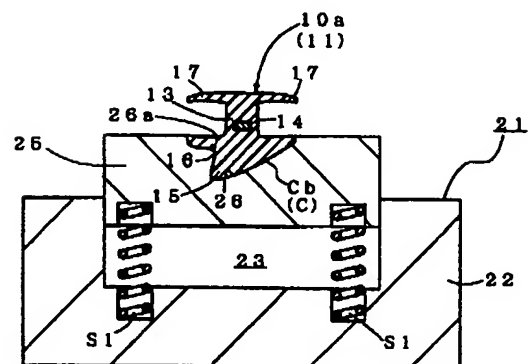
【図14】



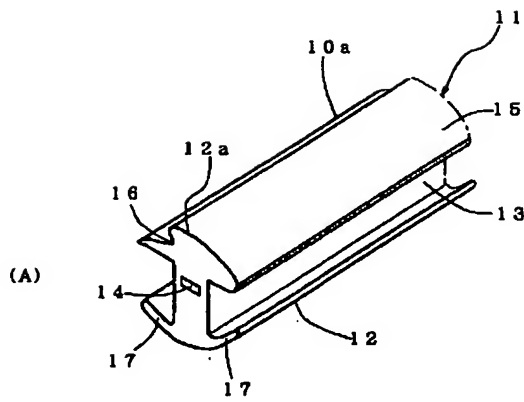
【図4】



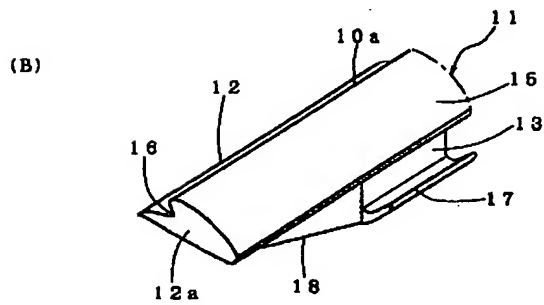
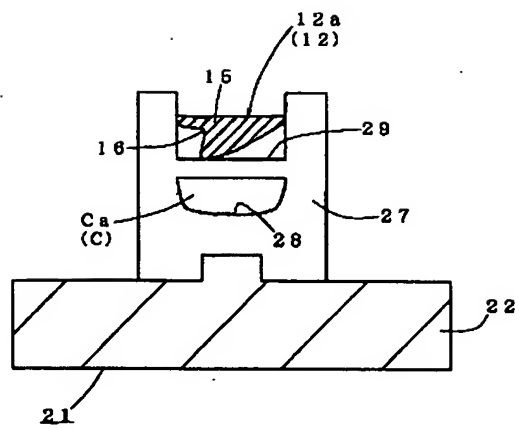
【図5】



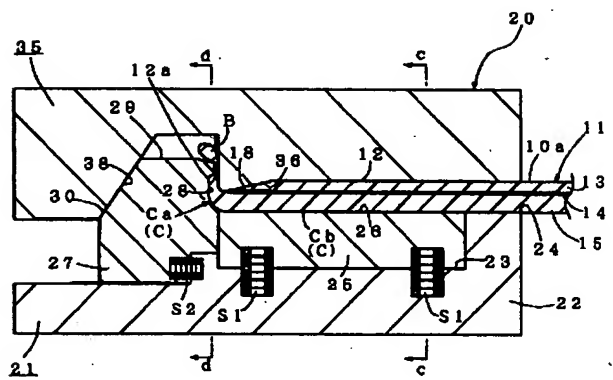
【図3】



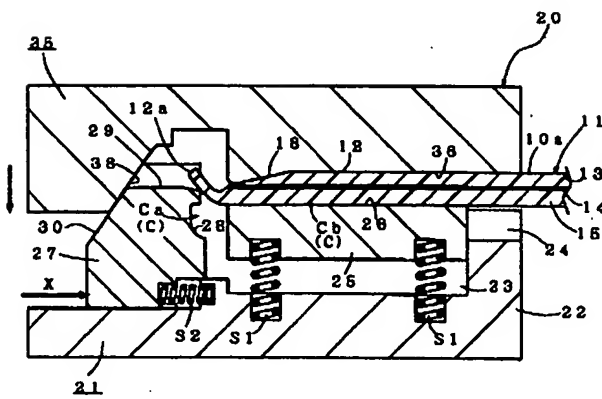
【図6】



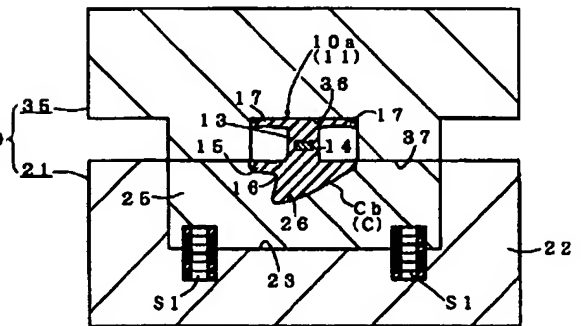
【図8】



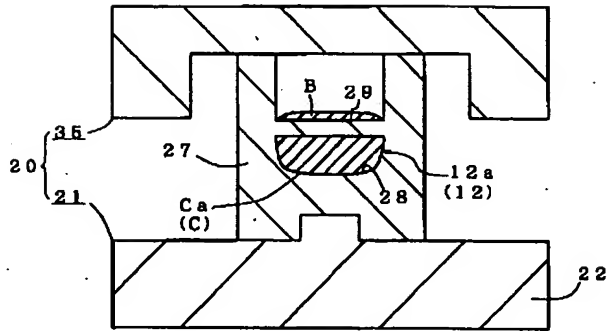
【図7】



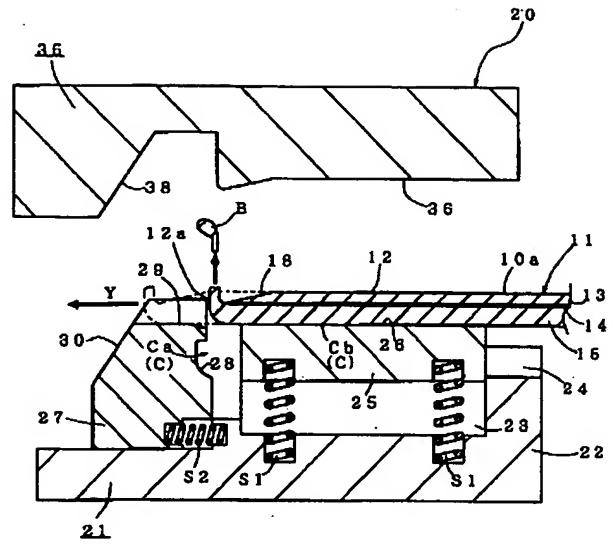
【図9】



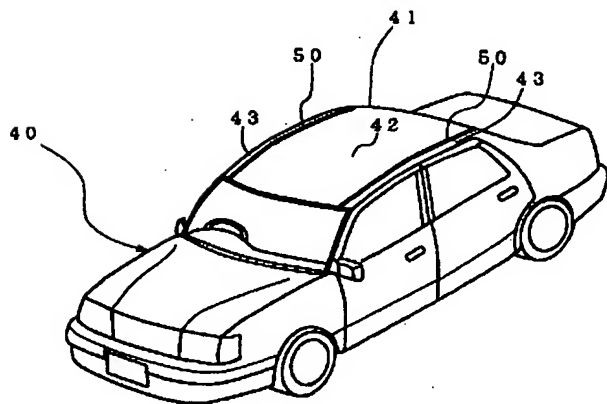
【図10】



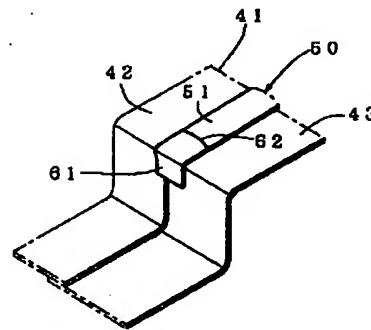
【図11】



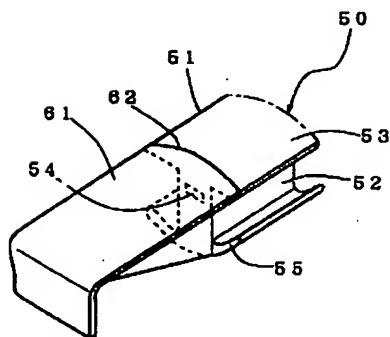
【図12】



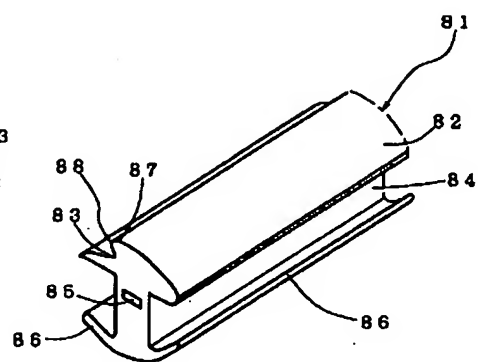
【図13】



【図15】



【図17】



(72)発明者 江藤 勇
愛知県安城市藤井町東長先8番地1 株式
会社イノアックコーポレーション桜井事業
所内

Fターム(参考) 3D023 AA01 AB01 AC08 AD09 AD11
AD22
4F202 AA00 AH23 AM32 CA09 CB01
CK18 CL02
4F204 AA00 AH23 AM32 FA01 FB01
FF49 FG05 FG08 FN02 FN15
FQ15

* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] As the tip of the mall material concerned runs aground to said cavity tip upper part to the cavity for terminal processing of female mold, it arranges the terminal of a mall material to it to it. In the terminal processing approach which carries out hot press, presses the terminal of said mall material, pushes in in the cavity of female mold, and carries out size enlargement with the Gokami mold While constituting the cavity for terminal processing of said female mold from a cavity point and the cavity body section following this point and making the inside of this cavity body section into the configuration corresponding to the ornament section appearance of said mall material It constitutes so that this cavity body section may be in the upper limit location of a cavity point, abbreviation, etc. by carrying out, and it may energize upwards to a location and may be depressed by the press from the upper part in the location of normal. A mall material is arranged to the cavity body circles of the female mold in said upper part location, and the tip of this material is made to project from the tip of said cavity body section, and it puts on the upper limit of said cavity point. Subsequently By carrying out heating softening of the terminal of said mall material, and depressing and carrying out hot press of the cavity body section into female mold with a mall material by the punch The terminal processing approach of the mall characterized by pushing in the tip of the projecting mall material in the cavity point of female mold, and carrying out size enlargement from the tip of said cavity body section.

[Claim 2] The terminal processing approach of the mall according to claim 1 characterized by a mall material being the extrusion-molding article for roof malls which has the lane garter section.

[Claim 3] As the tip of the mall material concerned runs aground to said cavity tip upper part to the cavity for terminal processing of female mold, it arranges the terminal of a mall material to it to it. In the metal mold used for carrying out hot press, pressing the terminal of said mall material, pushing in in the cavity of female mold and carrying out size enlargement with the Gokami mold While constituting the cavity for terminal processing of said female mold from a cavity point and the cavity body section following this point and making the inside of this cavity body section into the configuration corresponding to the ornament section appearance of said mall material this cavity body section -- the upper limit location of a cavity point, and abbreviation -- mall terminal processing characterized by constituting so that it may energize upwards to an equal location and may be depressed by the press from the upper part in the location of normal -- public funds -- a mold.

[Claim 4] mall terminal processing according to claim 3 characterized by having the protruding line to which the lane garter section of a mall material fits into the cavity body section -- public funds -- a mold.

[Translation done.]

* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] this invention -- the terminal processing approach of a mall, and mall terminal processing -- public funds -- the terminal processing approach of a mall of having a complicated cross-section configuration especially about a mold, and mall terminal processing -- public funds -- it is related with a mold.

[0002]

[Description of the Prior Art] As shown in the drawing 1313 expanding and showing drawing 12 and its part, the roof mall 50 is attached in the roof 41 of an automobile 40 in many cases. The slot 44 formed in the joint part is equipped with said roof mall 50 in order to hide the joint part by which a control house panel 42 and the flank panel 43 are joined to one so that I may be understood from drawing 14 which shows a part of roof which removed the roof mall 50.

[0003] Said roof mall 50 consists of the ornament section 53 which is prepared in the upper limit of the leg 52 and this leg 52, and becomes a design side, and it is equipped with it so that said leg 52 may be inserted in the slot 44 of said roof 41 and the ornament section 53 may close said slot 44, so that drawing 15 may show. Moreover, in order for the roof mall 50 to carry out wearing maintenance correctly to the slot 44 of said joint part at said leg 52 and to lessen linear expansion, along with a longitudinal direction, the metal core material 54 is laid underground in many cases. A sign 55 is the lip (fin piece) formed in the lower both-sides side of the leg 52 along with the longitudinal direction in order to ensure immobilization in said slot.

[0004] By the way, since a tear will be produced in the upper corner section 45 if press forming of the both ends is carried out in the same depth as the center of a slot 44, the slot 44 of the joint part of said roof 41 is gradually made shallow toward the edge of a slot 44. Therefore, in having used what only cut the long extrusion-molding article 51 which is a mall material to predetermined length as said roof mall 50, the lower limit of the leg 52 interferes in the body, it becomes impossible to equip with the roof mall 50 concerned correctly, and a fine sight is spoiled.

[0005] It is possible to carry out injection molding of the terminal section 61 in which the depth of the edge of said slot 44 was suited as one means to solve such faults, at the edge of the mall material 51 which consists of an extrusion-molding article cut to predetermined length as shown in drawing 15, and it was crooked by the amount of point to the background. However, if it was in the roof mall 50 which carried out injection molding of said terminal section 61, between the mall material 51 on the front face of a terminal, and the terminal section 61, joint Rhine 62 appeared and there were problems, such as spoiling the fine sight of the roof mall 50 concerned.

[0006] Then, processing the terminal of a mall material into predetermined configurations, such as a crookedness configuration, is proposed by hot press as shown in drawing 16. this hot press -- setting -- first -- (A) of this drawing -- like -- processing -- public funds -- the cavity 72 for terminal processing of the female mold 71 of a mold 70 -- the extrusion mold goods concerned -- **** -- as the tip 56 of the mall material 51 runs aground to the tip upper part (part [eaten]) 73 of

said cavity 72, while it arranges to it, heating softening of the terminal 57 of this mall material 51 is carried out with the heating means 75, such as a heater. Then, as shown in (B) of this drawing, by carrying out heating PUSU by the punch 76, the terminal 57 of said mall material 51 is pressed, and the terminal 57 of this material 51 is pushed in in the cavity 72 of female mold 71, and carries out size enlargement. According to this hot press, unlike what carried out injection molding of the terminal section explained previously, joint Rhine does not appear between the mall material 51 and a terminal 57, but an appearance becomes good. In addition, the terminal processing approach by this hot press is applied to terminal processing of various malls, such as a side mall attached in the door part of the car-body side face of said not only roof mall but an automobile. The sign 58 in drawing is the surplus part of the mall material which remained on the occasion of hot press, and, finally is excised.

[0007] However, it sets to the terminal processing approach of the mall by this hot press. Since near [tip 56] this mall material 51 is distantly [inside / of female mold 71 / cavity 72] separated at the time of heating of the terminal 57 of the mall material 51 so that (A) of drawing 16 may also show, A surroundings lump and the mall material 51 being heated too much and producing nonuniformity in the gloss on the front face of a product after processing had the hot blast of the heater which is the heating means 75 in the clearance G between terminal 57 front face of the mall material 51, and cavity 72 inside at the time of the heating.

[0008] Furthermore, it sets to said conventional terminal processing approach. Having the lane garter section 83 in the ornament section 82 as shown in drawing 17 etc. originates in the complicated cross-section configuration of this mall material 81, when carrying out terminal processing of the mall material 81 with a complicated cross-section configuration. At the time of the arrangement to the cavity of a mall material, cannot arrange this material in a right location, or the mall material concerned shifts after arrangement. The terminal of the mall material which carried out heating softening at the time of hot press may be unable to be correctly pushed in in a cavity, and, in such a case, there was a possibility that a good product -- the blemish and wrinkle which are called the so-called galling on a product front face arise -- might not be obtained. Moreover, when a mall material has not been arranged as mentioned above in a right location or the mall material after arrangement shifts, in case heating softening of the mall material is carried out, variation may arise in the heating condition of this mall material, and deformation may arise in the part which had said variation of a product after processing. In addition, the metal core material by which the sign 84 in drawing 17 was laid under the leg, and 85 was laid under the leg 84, and 86 are the lips (fin piece) formed in the lower both-sides side of the leg 84 along with the longitudinal direction.

[0009] moreover, like the mall material 81 shown in drawing 17 , in constituting the undercut configuration 88 between the lane garter section 83 of the ornament section 82, and the ornament section upper limit 87 Since the cavity inside of female mold will also have an undercut configuration corresponding to it, It is necessary to perform arrangement of the mall material into the cavity before hot press by carrying out slide insertion of this mall material from the back end side of a cavity. It is difficult to arrange the mall material concerned correctly so that a mall material tip may run aground to the tip upper part of a cavity, as mentioned above. In addition, when terminal processing of the mall material 81 which has the above-mentioned undercut configuration 88 was carried out, the unmolding activity of the product after hot press might be unable to be done smoothly.

[0010]

[Problem(s) to be Solved by the Invention] the terminal processing approach of this invention not having been made in view of the aforementioned point , the nonuniformity of joint Rhine and a gloss not appear in the design side of a terminal , it being able to gnaw and a wrinkle etc. not arise moreover even if the cross section configuration of a mall material be complicated , but obtain a mall product with a beautiful appearance , and terminal processing -- public funds -- it aim at offer a mold .

[0011]

[Means for Solving the Problem] Invention of claim 1 the terminal of a mall material to the cavity for terminal processing of female mold In the terminal processing approach which it arranges to it as the tip of the mall material concerned runs aground to said cavity tip upper part, and carries out hot press with the Gokami mold, presses the terminal of said mall material, pushes in in the cavity of female mold, and carries out size enlargement While constituting the cavity for terminal processing of said female mold from a cavity point and the cavity body section following this point and making the inside of this cavity body section into the configuration corresponding to the ornament section appearance of said mall material It constitutes so that this cavity body section may be in the upper limit location of a cavity point, abbreviation, etc. by carrying out, and it may energize upwards to a location and may be depressed by the press from the upper part in the location of normal. A mall material is arranged to the cavity body circles of the female mold in said upper part location, and the tip of this material is made to project from the tip of said cavity body section, and it puts on the upper limit of said cavity point. Subsequently By carrying out heating softening of the terminal of said mall material, and depressing and carrying out hot press of the cavity body section into female mold with a mall material by the punch The terminal processing approach of the mall characterized by pushing in the tip of the projecting mall material in the cavity point of female mold, and carrying out size enlargement from the tip of said cavity body section is started.

[0012] Invention of claim 2 is characterized by a mall material being the extrusion-molding article for roof malls which has the lane garter section in invention of claim 1.

[0013] Invention of claim 3 the terminal of a mall material moreover, to the cavity for terminal processing of female mold In the metal mold used for it arranging to it as the tip of the mall material concerned runs aground to said cavity tip upper part, carrying out hot press with the Gokami mold, pressing the terminal of said mall material, pushing in in the cavity of female mold and carrying out size enlargement While constituting the cavity for terminal processing of said female mold from a cavity point and the cavity body section following this point and making the inside of this cavity body section into the configuration corresponding to the ornament section appearance of said mall material this cavity body section -- the upper limit location of a cavity point, and abbreviation -- mall terminal processing characterized by constituting so that it may energize upwards to an equal location and may be depressed by the press from the upper part in the location of normal -- public funds -- a mold is started.

[0014] Moreover, invention of claim 4 is characterized by having the protruding line to which the lane garter section of a mall material fits into the cavity body section in invention of claim 3.

[0015]

[Embodiment of the Invention] According to an attached drawing, this invention is explained to a detail below. The perspective view of an important section showing the roof mall for automobiles where drawing 1 was obtained according to one example of this invention, mall terminal processing which uses drawing 2 for terminal processing of a mall -- public funds -- the perspective view showing an example of the female mold of a mold, and a punch -- The perspective view showing gradually an excision process [in / in drawing 3 / terminal processing of a mall], the sectional view in which drawing 4 is the same and showing an arrangement process and a heating softening process, The sectional view in which the a-a sectional view of drawing 4 and drawing 6 of the b-b sectional view of drawing 4 and drawing 7 are the same, and drawing 5 shows the closed mold early stages of a press process, The d-d sectional view of drawing 8 and drawing 11 are sectional views in which the c-c sectional view of drawing 8 and drawing 10 are the same, and the sectional view in which drawing 8 is the same and showing the time of closed mold completion of a press process, and drawing 9 show an unmolding process.

[0016] First, an example of the roof mall for automobiles obtained by the terminal processing approach of the mall concerning this invention is explained, and the terminal processing approach of that roof mall is explained below.

[0017] As for the roof mall 10 for automobiles shown in drawing 1 , the ornament section 15 was formed in the upper limit of the leg 13 and this leg 13 under which the metal core material 14 was laid at one. It is that by which terminal processing was carried out by the approach concerning this invention from the mall material 11 made of resin of the extrusion-molding article it is unrefined from a predetermined cross-section configuration. As for joint Rhine, body section 10a with which the deep part of the slot 44 of the roof 41 shown in drawing 14 is equipped, and the terminal 12 with which the shallow edge of a slot 44 is equipped serve as a single string that there is nothing.

[0018] While becoming gradually low towards tip 12a by the terminal processing approach which has jutted out to the cross direction both sides from leg 13 upper limit, having been used as the width of face which, as for said ornament section 15, that external surface constitutes a design side, and takes up the slot 44 of said roof 41, and requires that front face side for this invention about a terminal 12 and making the predetermined curved surface configuration, about tip of said terminal 12 12a, crookedness formation is carried out on the background. Moreover, in this example, said ornament section 15 has the lane garter section 16, and the cross-section configuration of the mall 10 concerned is complicated. Furthermore, the undercut configuration U consists of this example between the lane garter section 16 of said ornament section 15, and ornament section upper limit 15a.

[0019] On the other hand, said leg 13 is for being inserted in the slot 44 of said roof 41, and attaching this roof mall 10 in a slot 44, and when the leg 13 is inserted into said slot 44, in order to carry out a pressure welding to the side attachment wall of a slot 44 and to hold the roof mall 10 stably on lower both sides of the leg 13, the lip 17 which consists of elasticity resin is formed in one. In the terminal 12 of the roof mall 10, the leg 13 bottom is aslant excised from the body section 10a side towards ornament section 15 rear face so that it may become thin towards tip 12a of a terminal 12, and this leg 13 is removed also about said lip 17. A sign 18 is the excision section of the leg 13 formed of said excision, and is excised according to the depth of the edge of the slot 44 of said roof 41. In addition, in this example, the leg 13 is completely removed with the metal core material 14 near tip 12a of said terminal 12.

[0020] Next, terminal processing of the roof mall 10 which has said lane garter section 16 is explained as an example about one example of the terminal processing approach of the mall concerning this invention. mall terminal processing as shown in drawing 2 , drawing 7 , etc. in the terminal processing approach of an example -- public funds -- a mold 20 is used. The closed mold and the press of this metal mold 20 are enabled by the press equipment which is not illustrated including female mold 21 and a punch 35.

[0021] Female mold 21 is equipped with the body type section 22, the gone up and down type section 25 held free [rise and fall] in the hold space 23 of this body type section 22, and the slide mold section 27 before and after locating ahead of this gone up and down type section 25. The cavity C for terminal processing is formed of the shaping side 26 of said gone up and down type section 25, and the shaping side 28 of the order slide mold section 27. This cavity C consists of a cavity point calcium divided by the shaping side 28 of said order slide mold section 27, and the cavity body section Cb divided by the shaping side 26 of said gone up and down type section 25 following this point calcium. The inside 26 of said cavity body section Cb, i.e., the shaping side of the gone up and down type section 25, is formed in the configuration corresponding to ornament section 15 appearance of said mall material 11, and it has protruding line 26a into which the lane garter section 16 of the mall material 11 fits.

[0022] moreover, said cavity body section Cb -- the upper limit location (location of the installation side 29 for terminal tips formed in the top face of the order slide mold section 27 in the example of illustration) of the cavity point calcium, and abbreviation -- it is energized upwards to the equal location. And the cavity body section Cb energized to said upper part is depressed to a location where the shaping side 26 of said gone up and down type section 25 and the shaping side 28 of the order slide mold section 27 become flat-tapped in the location of normal, and the example by the

press from the upper part. In addition, in the example, the cavity body section Cb is energized as mentioned above by the elastic force of the spring S1 which intervened between said body type section 22 and the gone up and down type section 25 upwards. Furthermore, in the example, when the mall material receptacle section 24 is in the normal location of said cavity body section Cb, it is formed in said body type section 22 so that this body section Cb may be followed.

[0023] Furthermore, said order slide mold section 27 moves in the direction X of the inside from the outside of the cavity C for terminal processing by contacting the ramp 38 of the punch 35 which the lateral surface 30 mentions later with descent of the punch 35 at the time of a closed mold (advance). Moreover, a spring S2 intervenes between said slide mold section 27 and the body type section 22, and according to the elastic force of this spring S2, at the time of the punch 35 rise in the case of a mold aperture, the order slide mold section 27 moves in the direction Y of an outside from the inside of Cavity C (retreat), and returns to the original location. In addition, at the time of the rise of the gone up and down type section 25 by the rise of a punch 35, the location where said order slide mold section 27 retreats most is set up so that terminal tip 12a of the mall material 11 pushed in in the cavity point calcium and the order slide mold section 27 concerned may not contact.

[0024] A punch 35 has the press side 36 for mall materials for pressing the terminal 12 of the mall material 11 from a background. In the example of illustration, the press side 37 for the gone up and down type sections which the gone up and down type section 25 of said female mold 21 is pressed [side] on both sides of said press side 36 for mall materials, and drops this gone up and down type section 25 to them is established. In addition, said press side 37 for the gone up and down type sections is excluded depending on the case, and may be made to perform press of the mall material 11, and depression of said gone up and down type section 25 only as the thrust of said press side 36 for mall materials. Moreover, the ramp 38 to which this slide mold section 27 is moved in contact with the slide-before and after said female mold 21 mold section 27 is formed in the punch 35.

[0025] mall terminal processing which was described above -- public funds -- in terminal processing of the mall using a mold 30, the mall material 11 made of resin which first has the predetermined cross-section configuration shown in (A) of drawing 3 , i.e., said ornament section 15 and leg 13, and which consists of an extrusion-molding article is cut to predetermined length.

[0026] Then, to the mall material 11 of said predetermined length, it leaves the ornament section 15 about the background of the terminal 12, and as shown in (B) of drawing 3 , the leg 13 is partially excised from terminal tip 12a over the die length of predetermined length. cross excision of this leg 13 to the part in the edge of the slot 44 of said roof 41 a part became shallow , and a corresponding range , and the configuration where excision section 18 lower limit incline towards ornament section 15 rear face from the body section 10 a side of a line crack and the mall material 11 excise the leg 13 by the material so that the thickness of a mall material 11 become thin gradually towards terminal tip 12 a excise **** . Furthermore, in this example, as for near terminal tip 12a, the leg 13 is completely excised with the metal core material 14. In addition, the excision approach is performed by the well-known cutting process which uses a cutter etc.

[0027] Subsequently, as shown in drawing 4 thru/or drawing 6 , the terminal 12 of said mall material 11 is arranged in the cavity body section Cb of the female mold 21 in said upper part location. Under the present circumstances, tip 12a of the mall material 11 is made to project from the cavity body section Cb tip of said female mold 11, and it is made to put on the installation side 29 for terminal tips of the order slide mold section 27 in the upper limit of said cavity point calcium, and the example of illustration. Thus, if the mall material 11 is arranged to the cavity C for terminal processing, while being able to arrange the mall material 11 certainly in a right location very easily, the mall material 11 concerned cannot shift easily after arrangement. Moreover, when it has the undercut configuration U in the ornament section 15 of the mall material 11 like this example, arrangement into the cavity body section Cb of said mall material 11 is performed by carrying out slide insertion of the mall material 11 concerned from opening by the side of the back end of this

cavity body section Cb. In addition, at the time of arrangement of this mall material 11, said order slide mold section 27 is in a retreat location.

[0028] Heating softening of near [excision section 18] the terminal 12 of the mall material 11 is carried out with the heating means H, such as a heater, after arrangement of said mall material 11. Since a clearance is not generated between the terminal 12 of the mall material 11 and the inside 26 of the cavity body section Cb of female mold 21, i.e., the shaping side of the gone up and down type section 25, at this time unlike the former, it prevents the hot blast of the heater which is the heating means H turning between mall material 11 terminal 12 and a cavity body section Cb inside, and heating the mall material 11 too much, and is hard to produce nonuniformity in the gloss on the front face of a product. Extent of said heating is made into extent which the terminal 12 of the mall material 11 softens, and is made into proper temperature according to the quality of the material of the mall material 11. In addition, although said heating means H is established independently [metal mold 20] in the example of illustration, the heating means H concerned may be made to build in female mold 21 or a punch 35.

[0029] it is shown in drawing 7 thru/or drawing 1010 after heating softening of said terminal 12 -- as -- processing -- public funds -- the closed mold of the mold 20 is carried out, by said punch 35, with the mall material 11, the cavity body section Cb of said gone up and down type section 25 is depressed in the body type section 22 of female mold 21, and hot press of the excision section 18 of the mall material terminal 12 concerned is carried out. Tip 12a of the mall material 11 which projects from the tip of said cavity body section Cb is pushed in in said cavity point calcium by this, and size enlargement of the mall material terminal 12 concerned is carried out to a request configuration.

[0030] In the case of the closed mold of said metal mold 20, when the lateral surface 30 of the slide-before and after female mold 21 mold section 27 contacts the ramp 38 of a punch 35, it moves in the direction X of the inside from the outside of said cavity C for terminal processing, so that I may be understood from drawing 7 . At the time of closed mold completion, the order slide mold section 27 and the body type section 22 coalesce without a clearance like drawing 8 , and the cavity point calcium and the cavity body section Cb are continuously united. Thus, if it is made to move forward about the order slide mold section 27 in parallel with descent of the cavity body section Cb of said gone up and down type section 25, near tip 12a of the mall material terminal 12 can be made smoothly crooked on a background at the time of hot press, and pushing into the cavity point calcium of tip 12a of said mall material 11 can be performed certainly and smoothly. Consequently, the inside of the cavity C for terminal processing can be imprinted good for the mall material 11, and the mall product excellent in appearance nature is obtained. The sign B in drawing 8 is the surplus part of the mall material which remained on the occasion of hot press.

[0031] Then, as shown in drawing 11 , a punch 35 is raised and a mold aperture is carried out. the gone up and down type section 25 currently depressed in the body type section 22 of said female mold 21 at that time move in the direction Y of an outside from the inside of the cavity C for terminal processing so that the order slide mold section 27 may not bar a rise of the gone up and down type section 25 and the mall material 11 by which hot press be carried out , while it go up to the body type section 22 according to the energization force of a spring S1 and return to the original location in front of a closed mold .

[0032] While unmolding the mall material 11 by which hot press was carried out after said mold aperture, the mall product (roof mall) 10 as shown in drawing 1 R> 1 is obtained by removing the surplus part B produced in terminal tip 12a of the mall material 11. Since the mall material 11 by which hot press was carried out at the time of said unmolding is going up to the upper limit location of the cavity point calcium with the cavity body section Cb of said gone up and down type section 25, an unmolding activity becomes easy. In addition, in this example, unmolding of the mall material 11 is performed by sampling making the mall material 11 concerned slide in the direction Y of an outside from the inside of Cavity C, as the chain line of illustration shows to the ornament section

15 of the mall material 11 in consideration of having the undercut configuration U.

[0033]

[Effect of the Invention] Since hot press performs terminal processing according to the terminal processing approach of the mall concerning invention of claim 1 as it illustrates above and being explained, unlike carrying out injection molding of the terminal, joint Rhine does not appear in the design side of a product. Moreover, in this terminal processing approach, the cavity for terminal processing of female mold is constituted from a cavity point and the cavity body section following it. This cavity body section is in the upper limit location of a cavity point, abbreviation, etc. by carrying out, energize upwards to a location, and it is made to be depressed by the press from the upper part in the location of normal. After arranging a mall material to the cavity body circles in an upper part location, making the tip of this material project from said cavity body section tip and putting on said cavity point upper limit, Since hot press of said cavity body section is depressed and carried out into female mold with a mall material by the punch, a clearance is not generated between a material terminal front face and a cavity inside at the time of arrangement of a mall material. Consequently, in case heating softening of the mall material is carried out, it can prevent the hot blast of a heating means etc. turning between a mall material terminal front face and a cavity body section inside, and heating a mall material too much, and it is hard to produce nonuniformity in the gloss on the front face of a product after processing.

[0034] Furthermore, since a mall material is arranged to the cavity for terminal processing as mentioned above Even if the cross-section configuration of a mall material becomes complicated, while being able to arrange the mall material concerned in the right location of a cavity simply and certainly like [in case a mall material has the lane garter section like invention of claim 2] Since the arrangement concerned is performed in the flat condition, without making a mall material crooked, the stability of the mall material after arrangement increases and the mall material after arrangement cannot shift easily. Therefore, unlike the former, the terminal of the mall material which carried out heating softening at the time of hot press can be correctly pushed in in a cavity, the fault that the blemish and wrinkle which are called the so-called galling on a product front face occur can be canceled, and the product excellent in appearance nature can be obtained. In addition, in case heating softening of the mall material is carried out, variation does not arise in the heating condition of this mall material, but it is hard to produce deformation of the product after processing.

[0035] moreover, mall terminal processing concerning invention of claim 3 -- public funds -- according to the mold, said terminal processing approach can be enforced simply and certainly. If the protruding line into which the lane garter section of a mall material fits at the cavity body section of female mold is especially prepared in invention of claim 4 like, terminal processing of the mall which has the lane garter section can be performed suitably.

[Translation done.]

* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the perspective view of an important section showing the roof mall for automobiles obtained according to one example of this invention.

[Drawing 2] mall terminal processing used for terminal processing of a mall -- public funds -- it is the perspective view showing an example of the female mold of a mold, and a punch.

[Drawing 3] It is the perspective view showing the excision process in terminal processing of a mall gradually.

[Drawing 4] It is the sectional view showing an arrangement process and a heating softening process similarly.

[Drawing 5] It is the a-a sectional view of drawing 4 .

[Drawing 6] It is the b-b sectional view of drawing 4 .

[Drawing 7] It is the sectional view showing the closed mold early stages of a press process similarly.

[Drawing 8] It is the sectional view showing the time of closed mold completion of a press process similarly.

[Drawing 9] It is the c-c sectional view of drawing 8 .

[Drawing 10] It is the d-d sectional view of drawing 8 .

[Drawing 11] It is the sectional view showing an unmolding process similarly.

[Drawing 12] It is the perspective view of an example of the automobile by which it was equipped with the roof mall.

[Drawing 13] It is the enlarged drawing showing a part of the roof.

[Drawing 14] It is the enlarged drawing showing a part of roof from which the roof mall was removed.

[Drawing 15] It is the perspective view showing the terminal of the conventional roof mall.

[Drawing 16] It is the sectional view showing gradually terminal processing of the mall by the conventional hot press.

[Drawing 17] It is the perspective view showing an example of a mall material which has a complicated cross-section configuration.

[Description of Notations]

10 Roof Mall

11 Mall Material

12 Terminal of Mall Material

12a The tip of a mall material

15 Ornament Section

20 Metal Mold for Mall Terminal Processing

21 Female Mold

35 Punch

C The cavity for terminal processing of female mold
calcium Cavity point

Cb Cavity body section

[Translation done.]*** NOTICES ***

JPO and NCIP are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original .

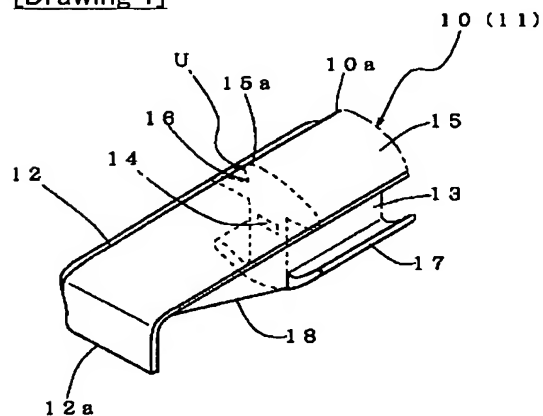
precisely.

2.**** shows the word which can not be translated.

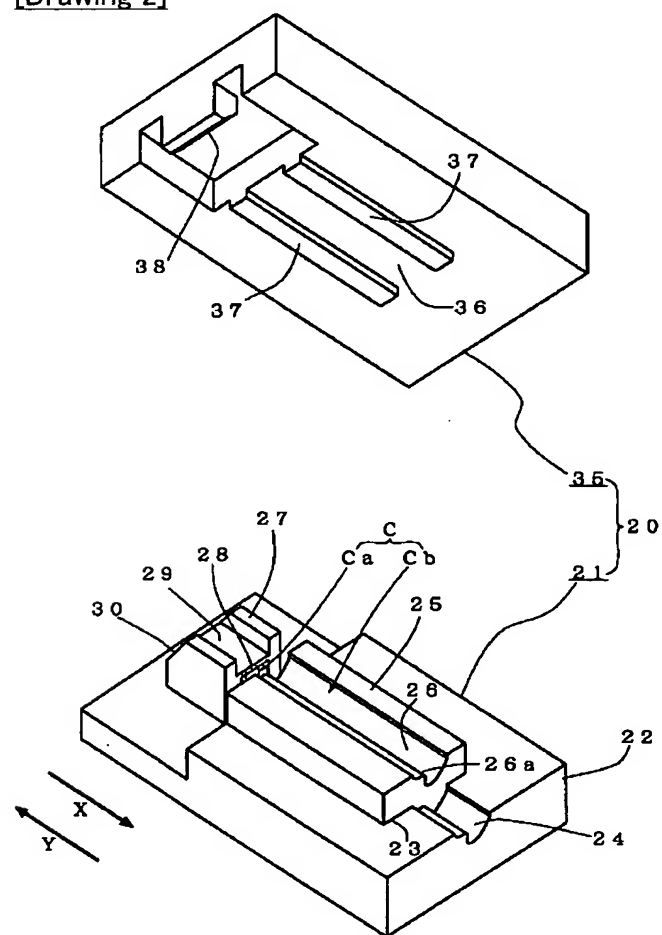
3.In the drawings, any words are not translated.

DRAWINGS

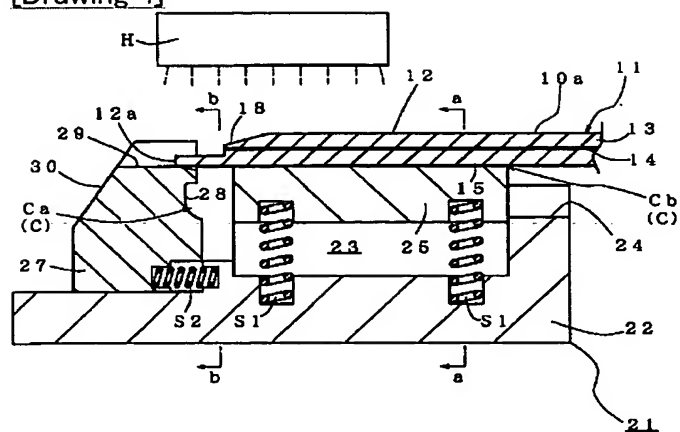
[Drawing 1]



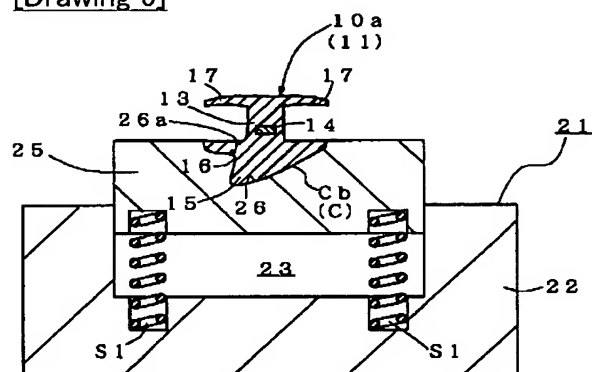
[Drawing 2]



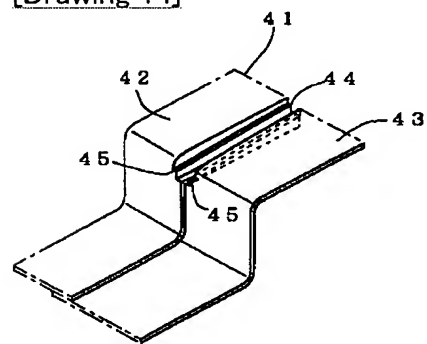
[Drawing 4]



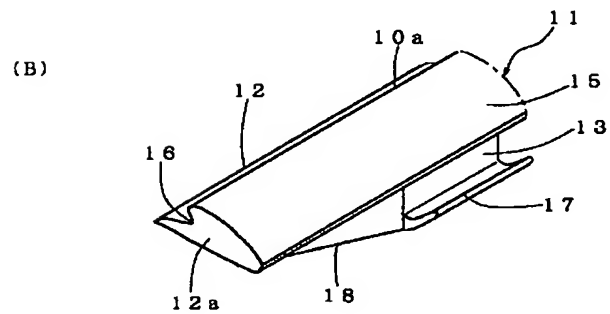
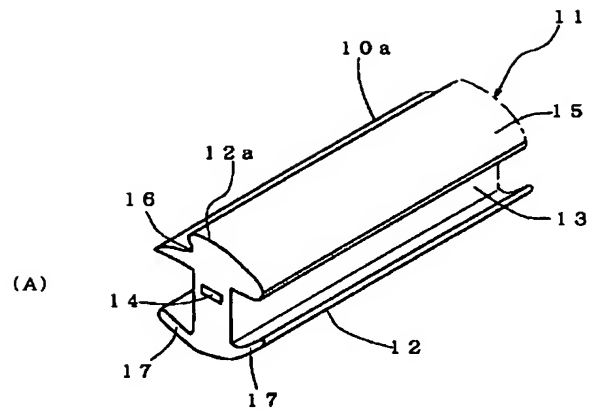
[Drawing 5]



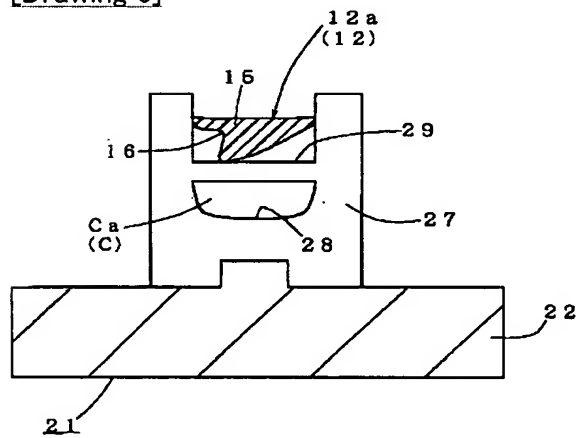
[Drawing 14]



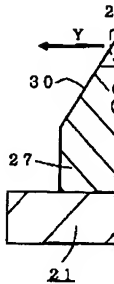
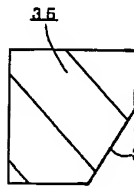
[Drawing 3]



[Drawing 6]



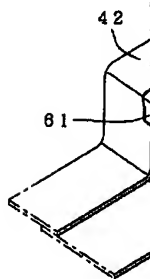
[Drawing 7]



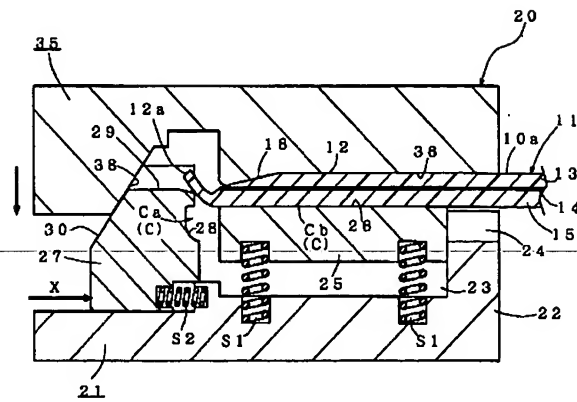
[Drawing 12]



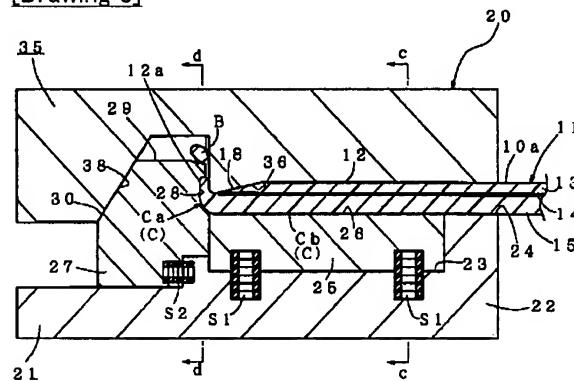
[Drawing 13]



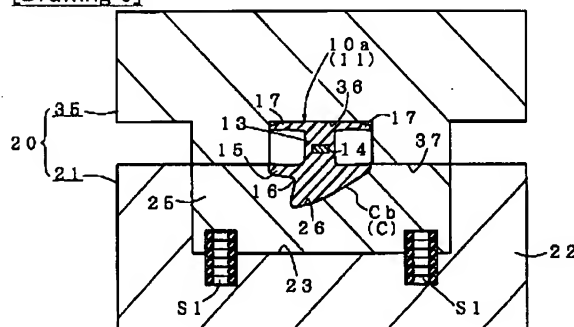
[Drawing 15]



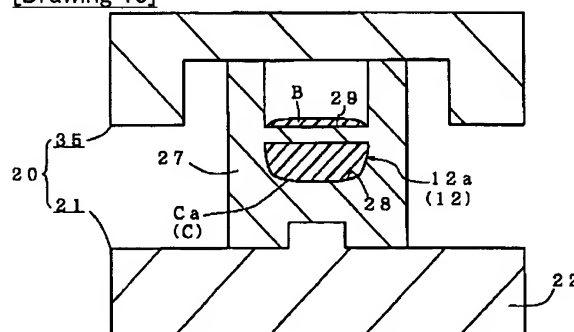
[Drawing 8]



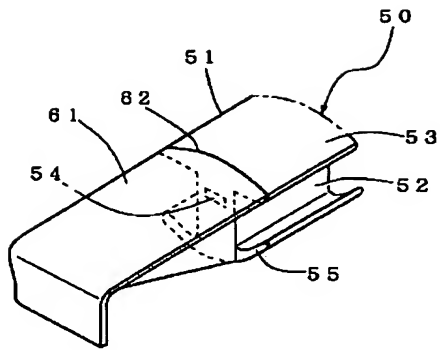
[Drawing 9]



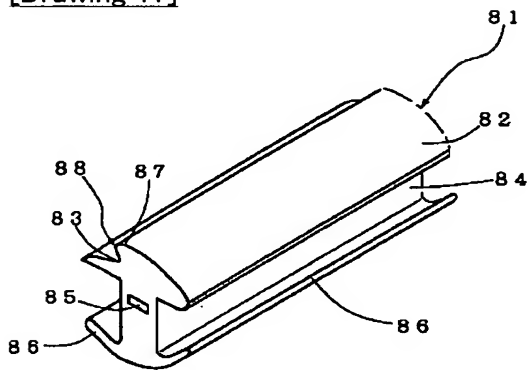
[Drawing 10]



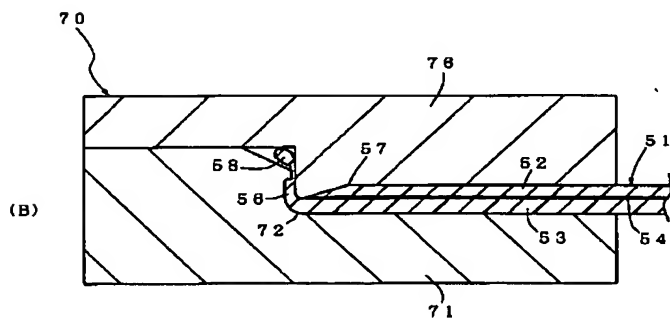
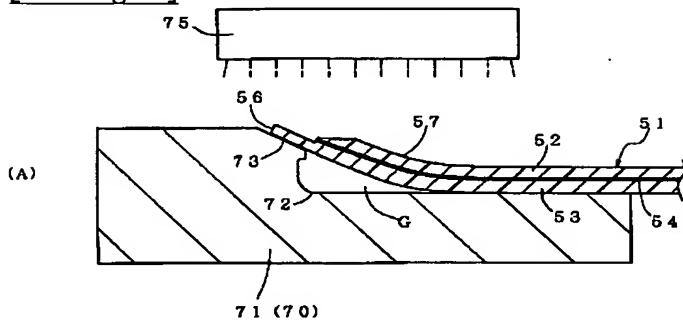
[Drawing 11]



[Drawing 17]



[Drawing 16]



[Translation done.]

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER: _____**

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.